

CLAIMS:

1. A method for controlling the operation of devices (61,62,63) of a hydrocarbon production system, comprising the steps of:-

5 (a) connecting at least one central controller (100) to at least one local controller, the central controller(s) (100) being reprogrammable and the local controller(s) being configured to locally control the operation of at least one respective device (61,62,63),

(b) transmitting data between the central controller(s) (100) and the  
10 local controller(s) in response to said central controller(s) (100) receiving signals,

(c) processing said transmitted data at the local controller(s), and

(d) transmitting data between the local controller(s) and its associated device(s) (61,62,63) according to the processed data so as to locally control the operation of the device(s) (61,62,63).

15 2. The method as claimed in claim 1, wherein method step (b) includes transmitting data between the central controller(s) (100) and the local controller(s) in response to said central controller(s) (100) receiving signals from any other central controller, and/or from the local controller(s).

20 3. The method as claimed in claim 1 or 2, including the step of connecting at least one remote master controller (101) to the central controller(s) (100).

4. The method as claimed in claim 3, including the step of transmitting data  
25 between the master controller(s) (101) and the central controller(s) (100) so as to remotely monitor the central controller(s).

5. The method as claimed in claim 3 or 4, including the steps of adding at least one device (64) and its associated local controller(s) to the hydrocarbon  
30 production system, transmitting data between the remote master controller(s)

(101) and the central controller(s) (100), and reprogramming the central controller(s) (100) to enable said newly added device(s) (64) and its local controller(s) to be used in the method.

5 6. The method as claimed in claim 3, 4 or 5, including the steps of transmitting data between the remote master controller(s) (101) and the central controller(s) (100), and reprogramming the central controller(s) (100) to enable the central controller(s) (100) to control existing local controllers in a different manner.

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7. The method as claimed in any preceding claim, including the step of feeding back data signals from the device(s) (61,62,63) to the local controller(s).

8. The method as claimed in any preceding claim, including the step of  
15 feeding back data signals from the local controller(s) to the central controller(s) (100).

9. The method as claimed in any preceding claim, wherein method step (d) includes controlling the device(s) (61,62,63) by at least activating or powering a  
20 sensor (62) and/or valve (63), and/or actuating a compressor, pump and/or actuator (61).

10. The method as claimed in any preceding claim, including the step of connecting the central controller (100) of one subsea control module (50a) to one  
25 or more central controllers (100) contained in one or more other subsea control modules (50b) in the same or another field development (170,180), and wherein method step (b) comprises transmitting data between any of the central controllers (100) and any of the local controllers contained in a retrievable module (49a,49b) or a tree (30') of the same or another field development  
30 (170,180).

11. A system for controlling the operation of devices (61,62,63) of a hydrocarbon production system, comprising:-

5 (a) connecting means (130) for connecting at least one central controller (100) to at least one local controller, the central controller(s) being reprogrammable and the local controller(s) being configured to locally control the operation of at least one respective device (61,62,63),

(b) transmitting means (130) for transmitting data between the central controller(s) (100) and the local controller(s) in response to said central controller(s) (100) receiving signals,

10 (c) processing means for processing said transmitted data at the local controller(s), and

(d) transmitting means for transmitting data between the local controller(s) and its associated device(s) (61,62,63) according to the processed data so as to locally control the operation of the device(s).

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12. The system as claimed in claim 11, including control means (101) for remotely controlling the central controller(s) (100) and transmitting means (120) for transmitting data between the master control means (101) and the central controller(s) (100).

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13. The system as claimed in claim 11 or 12, including means (130) for feeding back data signals from the device(s) (61,62,63) to the local controller(s) and from the local controller(s) to the central controller(s) (100).

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14. A computer program product comprising program code means stored in a computer readable medium for performing a method according to any one of the method steps as claimed in any one of claims 1 to 10 when that product is run on a computer.